REMARKS

The present response is intended to be fully responsive to the rejection raised in the Office Action, and is believed to place the application in condition for allowance. Further, the Applicants do not acquiesce to any portion of the Office Action not particularly addressed. Favorable reconsideration and allowance of the application is respectfully requested.

In the Office Action, the Office noted that claims 1-21 are pending, and that claims 1-21 are rejected. In view of the above amendments and the following discussion, the Applicants submit that none of the claims now pending in the application are anticipated under the provisions of 35 U.S.C. §102 or obvious under the provisions of 35 U.S.C. §103. Thus, Applicants believe that all of these claims are now in condition for allowance.

I. AMENDMENT TO THE CLAIMS

The Applicants amend independent claim 1 to correct a typographical error, namely, the word "expected" was missing from the phrase "said line-of-sight data". In view of the above-listed amendment, the independent claim 1 now correctly states "said expected line-of-sight data."

The Applicants submit that no new matter has been added by way of the above amendment. The Applicants also submit that, for the reasons set forth below, independent claim 1 is allowable over the prior art of record.

II. REJECTIONS

A. Response to §112 Rejection of Claims 8-10 and 17-19

The Office rejected dependent claims 8-10 under 35 U.S.C. §112, second paragraph, because the Office found that the claimed elements "updating said initial time-of-day in response to said detected bit transitions and said clock bias update data" was unclear in light of the claimed element "computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said line-of-sight data" of independent claim 1, from which claims 8-10 ultimately depend.

Specifically, the Office found the elements of dependent claim 8 to be unclear because Office could not determine how bit transition time-of-day determination uses

said pseudoranges and said expected pseudoranges. The Office stated the "[t]he line-of-sight data would be used to acquire the satellites, but the bit transitions are determined without determining measured pseudoranges or expected pseudoranges." The Office rejected claims 17-19, which ultimately depend from independent claim 11, for similar reasons.

The Applicants respectfully traverse the rejection of claims 8-10 and 17-19. To this end, the Applicants note that claims 8 and 17 use the terms "further comprising," and "further configured." As such, the elements of claims 8 and 17 are in addition to the elements of claim 1 and 11, and thus, need not further define nor expand the meaning of the elements of independent claims 1 and 11. Accordingly, the bit-transitions may be used to update the initial time-of-day without using a mathematical model relating said pseudoranges, said expected pseudoranges, and said line-of-sight data.

Notwithstanding the foregoing, the Applicants further submit that elements of claims 8 and 17 may further define and/or expand the meaning of the elements of independent claims 1 and 11. To this end, the Applicants submit that the bit-transitions may be used, for example, in conjunction with or as an input to the mathematical model that relates the pseudoranges, expected pseudoranges, said expected line-of-sight data, which, in turn, is used for updating the initial time-of-day. For more detail regarding any of the aforementioned examples, the Applicants refer the Office to pages 15-18.

In view of the foregoing, the Applicants submit that the claims 8 and 17 particularly point out and distinctly claim the subject matter which the Applicants regard as their invention, and are therefore allowable. In addition, the Applicants submit that claims 9-10 and 18-19 are likewise allowable because of their dependency from claims 8 and 17, respectively.

B. Response to §102(b) Rejection of Claims 1-21

i. Based on U.S. Patent No. 6,510,387

The Office rejected claims 1-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,510,387 granted to Fuchs et al. ("*Fuchs*"). The Applicants respectfully traverse this rejection.

The Office contended that *Fuchs* teaches all the elements of independent claims 1, 11 and 20, including the claimed elements *obtaining expected line-of-sight data to said plurality of satellites*. In support of this contention, the Office cited to *Fuchs* at col. 10, lines 61-67.

More specifically, *Fuchs* at col. 10, lines 61-67 states in its entirety:

> "[t]he method 500 begins with the rough estimate of user position from step 250 and rough estimate of the time of arrival of the GPS signal at the mobile device (step 502), obtained from the real time clock at the position server. In one embodiment, a reference satellite is chosen as the satellite with the highest elevation angle of all the available satellites" (emphasis added).

Unlike *Fuchs*, the Applicants claim a method and apparatus that includes a combination of elements directed to *obtaining expected line-of-sight data to said plurality of satellites*. That is, obtaining *what the line-of-sight data (between the mobile receiver and one or more satellites) is expected to be* when such line-of-sight data is formed from satellite-navigation data other than satellite-navigation messages concurrently measured by the mobile receiver or other device (in other words, line-of-sight data *mathematically projected using* satellite-navigation data other than satellite-navigation messages concurrently measured by the mobile receiver or other device). See, for example, the present application at page 10, paragraph [0030].

Contrary to the Office's contentions, the Applicants submit that the above-listed section (and the rest) of *Fuchs* does not disclose the claimed elements *expected (i.e., the mathematically projected) line-of-sight data to said plurality of satellites*, whatsoever, and thus, does not describe any process or function related to and/or otherwise associated with such elements. That is, *Fuchs* does not disclose, for example, the claimed elements directed to *obtaining expected line-of-sight data to said plurality of satellites, and computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said expected line-of-sight data*.

The Applicants submit that *Fuchs* merely discloses choosing a reference satellite having the highest elevation angle of all available satellites for computing full pseudoranges, and is totally devoid of any explicit or inherent disclosure of *obtaining expected (i.e., mathematically projected) line-of-sight data to said plurality of satellites*. See *Fuchs* at col. 10, line 67 to col. 11, line 15. In fact, *Fuchs* states with

respect to its mathematical model for computing a position of a mobile device using a model of latency error:

> "*H* is a matrix with five columns … [t]he first three columns are line-of-sight vectors, of unit length, pointing from the satellites to the rough user position … [n]ote that the first four columns of *H* and the first four elements of the vector x are **standard in the GPS literature**" (emphasis added). *Id.,* at col. 12, lines 20 and lines 27.

Noticeably, there is no discussion in the foregoing quotes of *Fuchs* with respect to *expected (i.e., mathematically projected) line-of-sight data.* Instead, *Fuchs* states that its line-of-sight vectors are obtained using standards set forth in GPS literature. Clearly, this is not the same as the aforementioned claimed elements directed to *obtaining what the line-of-sight data (between the mobile receiver and one or more satellites) is expected to be when such line-of-sight data is formed from satellite-navigation data other than satellite-navigation messages concurrently measured by mobile receiver or other device.*

Since *Fuchs* lacks at least one element of each of the independent claims 1. 11 and 20, the Applicants submit that *Fuchs* does not anticipate the claimed invention under 35 U.S.C. §102(b). As such, the Applicants submit that each of the independent claims 1, 11 and 20 are patentable over *Fuchs.*

Claims 2-10, 12-19 and 21 depend, either directly or indirectly, from independent claims 1, 11 or 20. Since the Applicants submit that *Fuchs* fails to anticipate the independent claims 1, 11 and 20 for the reasons set forth above, the Applicants further submit that *Fuchs* likewise fails to anticipate each of the dependent claims 2-10, 12-19 and 21. Thus, the Applicants submit that the claims 1-21 fully satisfy the requirements of 35 U.S.C. §102, and therefore, are allowable.

ii. Based on Detailed Description of U.S. Patent No. 6,215,442

The Office rejected claims 1-2, 7-12 and 16-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,215,442 granted to Sheynblat et al. ("*Sheynblat*"). The Applicants respectfully traverse this rejection.

The Office contended that *Sheynblat* teaches all the elements of independent claims 1, 11 and 20, including the claimed elements *obtaining expected pseudoranges to a plurality of satellites, said expected pseudoranges based on an initial position of said mobile receiver and an initial time-of-day.* In support of this

contention, the Office cited to the detailed description of *Sheynblat* at col. 5, line 53 and lines 63-64; and col. 6, lines 1-2.

More specifically, *Sheynblat* at col. 5, lines 50-53, and lines 63-64; and col. 5, line 65 to col. 6, lines 4 states:

> "ΔPRi is the pseudorange residual for the ith satellite (i=1, 2, 3, 4, 5), and represents a difference between the measured pseudorange and an initial estimated range to the ith satellite (known); …
>
> Δx, Δy, Δz, and Δcb are the corrections to the initial estimates of coordinates/position and the clock of the receiver (unknown); …
>
> Δt is the offset in the time measurement, which, in one embodiment, represents the difference (or offset) between the estimated time at which the pseudorange measurements are taken and a reference time (e.g., GPS system time, a time based on GPS system time, etc.) (unknown)" (emphasis added to show citations by the Office).

Unlike *Sheynblat*, the Applicants claim a method and apparatus that includes a combination of elements directed to *obtaining expected pseudoranges to a plurality of satellites*. That is, obtaining *what the pseudoranges (between the mobile receiver and one or more satellites) are expected to be* when such pseudoranges are formed from satellite-navigation data other than satellite-navigation messages concurrently measured by mobile receiver or other device (in other words, *mathematically projected* pseudoranges). See, for example, the present application starting at page 7, paragraph [0023] to page 9, paragraph [0029].

Contrary to the Office's contentions, the Applicants submit that the above-listed section (and the rest) of *Sheynblat* does not disclose the claimed elements *expected (i.e., mathematically projected) pseudoranges to said plurality of satellites*, whatsoever, and thus, does not describe any process or function related to and/or otherwise associated with such elements. That is, *Sheynblat* does not disclose, for example, the claimed elements directed to *obtaining expected pseudoranges to said plurality of satellites, and computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said line-of-sight data*.

The Applicants submit that *Sheynblat* merely discloses obtaining an initial estimated range to one or more satellites (as set forth in the above-quoted section), where such initial estimated range is based on measured pseudoranges having errors associated with a clock of its SPS receiver, and is totally devoid of any explicit

or inherent disclosure of *obtaining expected (i.e., mathematically projected) pseudoranges to said plurality of satellites*. See *Sheynblat* at col. 4, lines 40-65. In fact, *Sheynblat* states with respect to its mathematical model for time determination (to which the Office cited in its rejection):

> "[i]n the method 200 shown in FIG. 2, an entity, such as a mobile SPS receiver 100 shown in FIG. 1A, estimates its position to a set of one or more satellites in step 202. **In one embodiment, the SPS receiver may determine a set of pseudoranges to the set of satellite based on signals transmitted from the satellites. As such**, any range or position estimate by the SPS receiver will typically be offset relative to an actual position or range, due to an offset between the time of measurement as provided by the clock of the SPS receiver, and a reference time ...
>
> In step 204, a basestation, such as the basestation shown in FIG. 7A, receives estimation information from the SPS receiver. For example, the estimation information may include a representation of pseudorange measurements, as associated with an estimate of the time of measurement by the SPS receiver ... **[a]s mentioned above**, without knowledge of satellite position at an exact instant of time, relative to an accurate reference time, the SPS receiver may only be limited to an estimate/approximation of its position that may be offset by the actual distance due any offset/error in time.
>
> In step 206, the basestation determines the time offset associated with the range or position estimate of the SPS receiver, as represented by the estimation information provided to the basestation by the SPS receiver, based on an estimate of the relative velocity of the set of satellites. In one embodiment, the relative velocity of each of the set of satellites represents an approximated relative velocity between the satellite and the mobile SPS receiver. A method, according to one embodiment of the invention, for utilizing relative satellite velocity to determine time offset between a time of measurement by an SPS receiver and a reference time (e.g., GPS system time) is described below with reference to **matrix equation (4)"** (emphasis added). *Id.,* at col. 4, lines 41-52, which

Noticeably, there is no discussion in the foregoing quotes of *Sheynblat* with respect to *expected (i.e., mathematically projected) pseudoranges*. Instead, *Sheynblat* discloses that the initial estimated range to the ith satellite are acquired by the SPS receiver determining and sending to a server a set of pseudoranges to the set of satellites **based on signals transmitted from the satellites**. Clearly, this is not the same as the aforementioned claimed elements directed to *obtaining what the pseudoranges (between the mobile receiver and one or more satellites) are expected to be when such pseudoranges are formed from satellite-navigation data*

other than satellite-navigation messages concurrently measured by mobile receiver or other device.

Since *Sheynblat* lacks at least one element of each of the independent claims 1, 11 and 20, the Applicants submit that *Sheynblat* does not anticipate the claimed invention under 35 U.S.C. §102(b). As such, the Applicants submit that each of the independent claims 1, 11 and 20 are patentable over *Sheynblat*.

Claims 2, 7-10, 16-20 and 21 depend, either directly or indirectly, from independent claims 1, 11 or 20. Since the Applicants submit that *Sheynblat* fails to anticipate the independent claims 1, 11 and 20 for the reasons set forth above, the Applicants further submit that *Sheynblat* likewise fails to anticipate each of the dependent claims 2, 7-10, 16-20 and 21. Thus, the Applicants submit that the claims 1-21 fully satisfy the requirements of 35 U.S.C. §102, and therefore, are allowable.

iii. Based on Background of U.S. Patent No. 6,215,442

The Office rejected claims 1-2, 7-12 and 16-21 under 35 U.S.C. § 102(b) as being anticipated by the background of *Sheynblat*. The Applicants respectfully traverse this rejection.

As above, the Office contended that *Sheynblat* teaches all the elements of independent claims 1, 11 and 20, including the claimed elements *obtaining expected pseudoranges to a plurality of satellites, said expected pseudoranges based on an initial position of said mobile receiver and an initial time-of-day*. In support of this contention, the Office cited to the background of *Sheynblat* at col. 2, line 11 and lines 17-18.

More specifically, *Sheynblat* at col. 2, lines 9-12 and lines 17-21, states:

"ΔPRi is the pseudorange residual for the ith satellite (i=1, 2, 3, 4), and represents a difference between the measured pseudorange and an initial estimated range to the ith satellite (known);

Δx, Δy, Δz, and Δcb are the corrections to the initial estimates of coordinates/position and the clock of the receiver, which may be offset from a reference clock (unknown)" (emphasis added to show citations by the Office).

As above, the Applicants, unlike *Sheynblat*, claim a method and apparatus that includes a combination of elements directed to *obtaining expected pseudoranges to a plurality of satellites*. That is, obtaining *what the pseudoranges*

(between the mobile receiver and one or more satellites) are expected to be when such pseudoranges are formed from satellite-navigation data other than satellite-navigation messages concurrently measured by mobile receiver or other device (in other words, *mathematically projected* pseudoranges). See, for example, the present application starting at page 7, paragraph [0023] to page 9, paragraph [0029].

The Applicants submit that *Sheynblat* merely discloses obtaining an initial estimated range to one or more satellites (as set forth in the above-quoted section), where such initial estimated range is based on measured pseudoranges having errors associated with a clock of its SPS receiver, and is totally devoid of any explicit or inherent disclosure of *obtaining expected (i.e., mathematically projected) pseudoranges to said plurality of satellites*. See *Sheynblat* at col. 1, lines 24-65. In fact, *Sheynblat* states with respect to its mathematical model for time determination (to which the Office cited in its rejection):

> "thus, an SPS receiver typically determines timing information **by reading and timing information contained in the satellite message**. Many receivers determine position and time by using measurements from four (or more) satellites … [t]he range to each of four satellites (i=1, 2, 3, 4) may be expressed as:
>
> $$PRi = \sqrt{(x - xi)^2 + (y - yi)^2 + (z - zi)^2} + cb \qquad (1)$$
>
> … PRi is referred to as a pseudorange, since it represents the actual range to the ith satellite, plus or minus an offset that may result due to the receiver's clock error, as indicated by the cb term in equation (1). The above equation, **using measurements from four satellites**, may be linearized and expressed in matrix form as follows [in equation 2]: (emphasis added). *Id.,* at col. 2, lines 39-64, which

Noticeably, there is no discussion in the foregoing quotes of *Sheynblat* with respect to *expected (i.e., mathematically projected) pseudoranges*. Instead, *Sheynblat* discloses that the initial estimated range to the ith satellite are acquired by the SPS receiver determining a set of pseudoranges to the set of satellites **based on signals transmitted from the satellites**. Clearly, this is not the same as the aforementioned claimed elements directed to *obtaining what the pseudoranges (between the mobile receiver and one or more satellites) are expected to be when such pseudoranges are formed from satellite-navigation data other than satellite-navigation messages concurrently measured by mobile receiver or other device*.

Since *Sheynblat* lacks at least one element of each of the independent claims 1, 11 and 20, the Applicants submit that *Sheynblat* does not anticipate the claimed invention under 35 U.S.C. §102(b). As such, the Applicants submit that each of the independent claims 1, 11 and 20 are patentable over *Sheynblat*.

Claims 2, 7-10, 16-20 and 21 depend, either directly or indirectly, from independent claims 1, 11 or 20. Since the Applicants submit that *Sheynblat* fails to anticipate the independent claims 1, 11 and 20 for the reasons set forth above, the Applicants further submit that *Sheynblat* likewise fails to anticipate each of the dependent claims 2, 7-10, 16-20 and 21. Thus, the Applicants submit that the claims 1-21 fully satisfy the requirements of 35 U.S.C. §102, and therefore, are allowable.

iv. Based on U.S. Patent No. 6,417,801

The Office rejected claims 1-3, 7-13, and 16-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,417,801 granted to van Diggelen ("*van Diggelen*"). The Applicants respectfully traverse this rejection.

The Office contended that *van Diggelen* teaches all the elements of independent claims 1, 11 and 20, including the claimed elements *obtaining expected line-of-sight data to said plurality of satellites*. In support of this contention, the Office cited to process 310 of *van Diggelen* at col. 8, lines 36-43.

More specifically, *van Diggelen* at col. 8, lines 36-43 states in its entirety:

> "[a]t step 310, a single satellite is chosen as a reference satellite. In the preferred embodiment the satellite with the highest elevation angle (from the a-priori position) is chosen as the reference, but it will be understood that it is not important which satellite is used as the reference." (emphasis added).

Unlike *van Diggelen*, the Applicants claim a method and apparatus that includes a combination of elements directed to *obtaining expected line-of-sight data to said plurality of satellites*. That is, obtaining *what the line-of-sight data (between the mobile receiver and one or more satellites) is expected to be* when such line-of-sight data is formed from satellite-navigation data other than satellite-navigation messages concurrently measured by the mobile receiver or other device (in other words, line-of-sight data *mathematically projected using* satellite-navigation data other than satellite-navigation messages concurrently measured by the mobile

receiver or other device). See, for example, the present application at page 10, paragraph [0030].

Contrary to the Office's contentions, the Applicants submit that the above-listed section (and the rest) of *van Diggelen* does not disclose the claimed elements *expected (i.e., the mathematically projected) line-of-sight data to said plurality of satellites*, whatsoever, and thus, does not describe any process or function related to and/or otherwise associated with such elements. That is, *van Diggelen* does not disclose, for example, the claimed elements directed to *obtaining expected line-of-sight data to said plurality of satellites, and computing update data for said initial time-of-day using a mathematical model relating said pseudoranges, said expected pseudoranges, and said expected line-of-sight data*.

The Applicants submit that *van Diggelen* merely discloses choosing a reference satellite having the highest elevation angle of all available satellites for computing full pseudoranges, and is totally devoid of any explicit or inherent disclosure of *obtaining expected (i.e., mathematically projected) line-of-sight data to said plurality of satellites*. See *van Diggelen* at col. 8, lines 36-43.

Noticeably, there is no discussion in the foregoing quotes of *van Diggelen* with respect to *expected (i.e., mathematically projected) line-of-sight data*. Instead, *van Diggelen* states that "the satellite with the highest elevation angle (from the a-priori position) is chosen as the reference." Clearly, this is not the same as the aforementioned claimed elements directed to *obtaining what the line-of-sight data (between the mobile receiver and one or more satellites) is expected to be when such line-of-sight data is formed from satellite-navigation data other than satellite-navigation messages concurrently measured by mobile receiver or other device.* .

Since *van Diggelen* lacks at least one element of each of the independent claims 1 and 11, the Applicants submit that *van Diggelen* does not anticipate the claimed invention under 35 U.S.C. §102(b). As such, the Applicants submit that each of the independent claims 1 and 11 are patentable over *van Diggelen*.

Claims 2-3, 7-13 and 16-21 depend, either directly or indirectly, from independent claims 1, 11 or 20. Since the Applicants submit that *van Diggelen* fails to anticipate the independent claims 1, 11 and 20 for the reasons set forth above, the Applicants further submit that *van Diggelen* likewise fails to anticipate each of the dependent claims 2-3, 7-13 and 16-21. Thus, the Applicants submit that the claims 1-21 fully satisfy the requirements of 35 U.S.C. §102, and therefore, are allowable.

CONCLUSION

In view of the foregoing, the Applicants submit that none of the claims presently in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. §103. Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Office believes that any unresolved issues still exist or if, in the opinion of the Office, a telephone conference would expedite passing the present application to issue, the Office is invited to call the undersigned attorney directly at 732-978-4899 or the office of the undersigned attorney at 732-978-7100 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

Moser IP Law Group

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